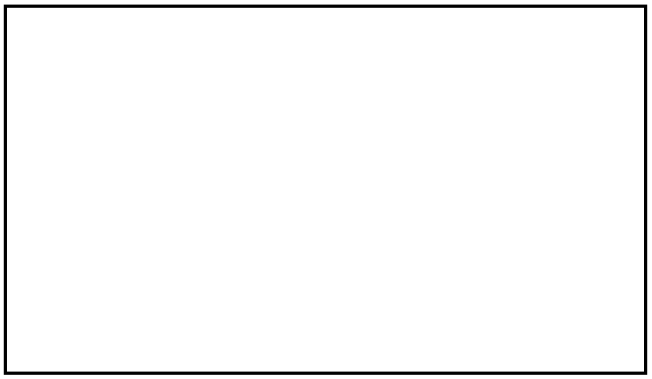
AL-45-700085-2
RT-12R

OPERATING INSTRUCTIONS
FOR THE

ROLLER TRANSPORT REVERSAL PROCESSOR, 12-INCH (No. 1-120-E-001)



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October 1965

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DATA SHEET

Capabilities	Product Type: Certain black-and-white aerial and commercial films both cut sheet and continuous strip.
	Sizes: a. Cut Sheet 4 x 5 inches through 11 x 14 inches
	b. Continuous Strip Standard widths from 70mm through 9.5 inches and in lengths up to 1000 feet maximum
Dimensions	Length: 15 feet 9 inches Width: 5 feet Height: 5 feet 6 inches
Weight	7000 pounds installed, empty
Power Requirements	220/208 volts, 50 amperes, 60 cycles, AC, 3-phase, 4 wire
Water Requirements	Hot: 130F ± 10F Chilled: 50F ± 5F Pressure: 30 psig minimum
Air	25 psig instrument air, 5 CFM
Drain Requirements	Approximately 30 GPM maximum
Air Exhaust Requirements	Approximately 100 CFM maximum

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INTRODUCTION AND DESCRIPTION

1.1 PURPOSE

The Roller Transport Reversal Processor, 12-Inch, (RT-12R) can process either cut sheet or continuous strip black-and-white films. The machine can be changed easily between processes yielding reversal or standard negative images. Darkroom operation at the feeding station while processing cut sheet film is mandatory; with continuous strip films, processing may occur under white light since a lighttight film supply magazine or cassette is used at the feeding station.

Temperatures, replenishment, and recirculation of the processing solutions are controlled on a solution control panel which is attached directly to the rear of the processor.

An over-all view of the processor is depicted in Figure 1, and various components are identified in the schematic in Figure 2.

1.2 MACHINE DESCRIPTION

1.2.1 Frame and Panel Construction

The RT-12R Processor consists of three main sections: the feed stand, the processing tank section, and the dryer section. Construction of the frames and panels for all three sections is identical. Frames are welded from right-angle stainless steel. The top and side panels are built of honey-

Figure 1. Over-All View of Roller Transport Reversal Processor, 12-Inch

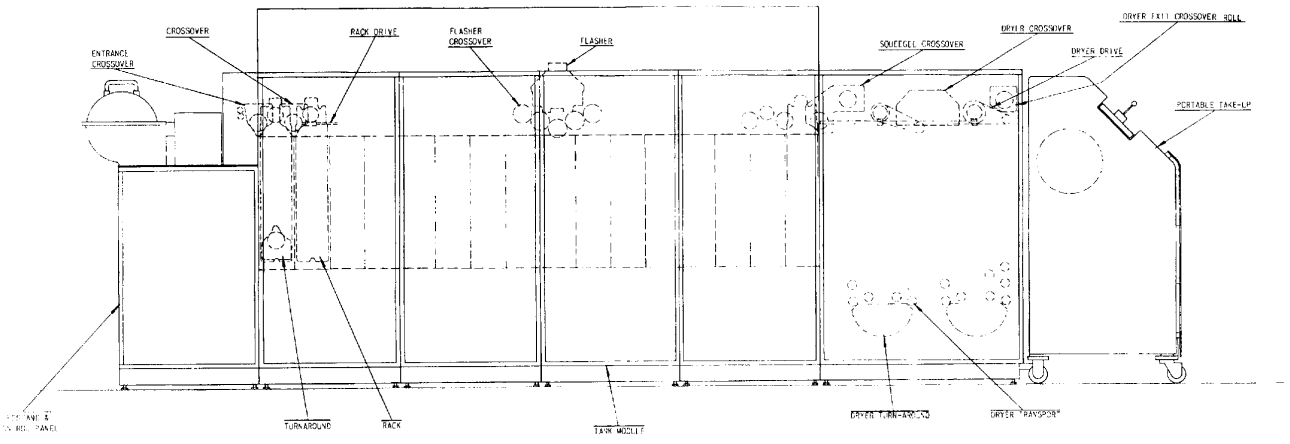


Figure 2. Schematic of RT-12R Processor

comb aluminum sandwiched between two aluminum sheets. Both sides of every panel are then covered with vinyl: one side with a solid beige color; the other with a walnut grain. Thus the panels are lightweight and are easily removed for inspection and operational purposes.

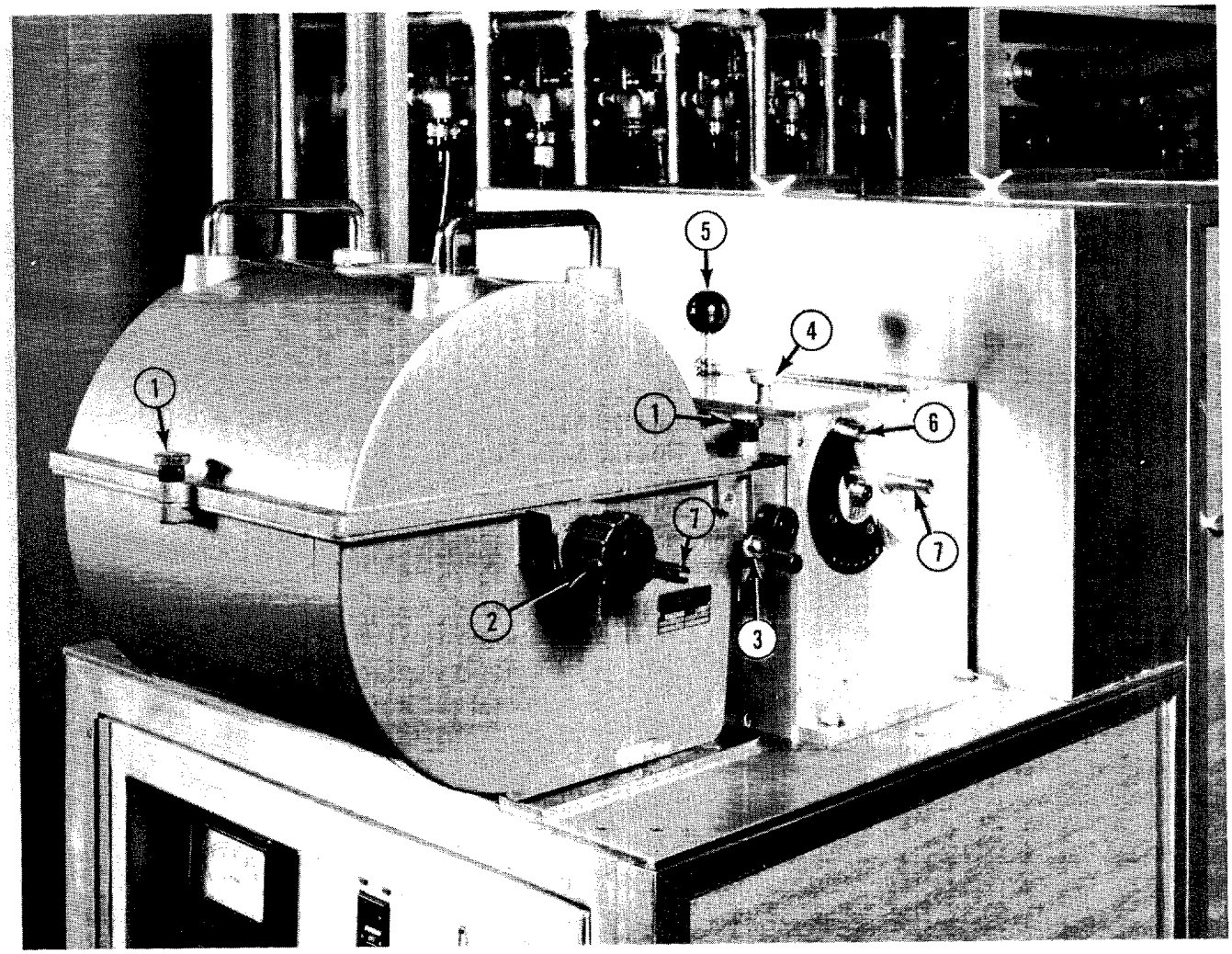
The frame members are finished with baked enamel which is easy to wipe clean and is not affected by processing chemicals. The same properties are true for the vinyl surfaces on the panels.

1.2.2 Feed Stand

The feed stand is a cabinet that contains the electrical control panel and associated wiring. It also houses the main drive assembly.

Standing on two brackets about seven inches above the top of the feed stand is the feeding station entrance guide which is level with the feed slot. Sheet product is placed on this guide and fed into the processor. For processing continuous web or roll products, the edge guide is removed and replaced by a feed tunnel assembly to accommodate two types of lighttight film cassettes. This operational mode is shown in Figure 3.

Under each corner of the feed stand are leveling screws that can be adjusted to align the stand with the processing tank section.



1. Cover Locking Knob, "A-9" Cassette
2. Spool Retainer Knob
3. Light Lock Lever
4. Feed Tunnel Cover Locking Knob
5. Plunger
6. Light Lock Release for Special Cassette
7. Spindle for Handcrank or Prony Brake Pulley

Figure 3. Film Cassette and Feed Tunnel Mounted on Feed Stand

1.2.3 Electrical Control Panel

The panel is shown in Figure 4. Following is a description of each control and indicator on this panel:

a. MAIN. This control is used as the primary electrical switch for the processor; it must be turned ON before any other electrical control will function. The control is a 50-amp circuit breaker to protect the processor circuits. Further, it is rated to operate at 220 volts ac, 60 cycle, 3 phase, 4 wire.

b. BLOWER SELECTOR. There are four positions 1, 2, 3, and 4 on this switch which is used to control the speed of the dryer blower motor. At position 1 the motor turns at 600 rpm; at 2, 900 rpm; at 3, 1200 rpm; and at 4, 1800 rpm. A stop is built in the switch that prevents it being turned directly from position 4 to 1. The switch must be reversed through positions 3 and 2 to 1.

c. SPEED INDICATOR. The rate of film traveling through the processor is indicated on this tachometer in feet per minute. The instrument is coupled to a transistorized speed control that is part of the main drive motor.

d. SPEED CONTROL. This micropotentiometer is used to adjust the speed of the main drive motor. Although its dial shows space for three digits, the control is limited to only a 340-degree turn and indicates numerals from 0 to 87. The numerals could be referenced to machine speed in feet per minute. The control is connected to the same transistorized device on the main drive motor as the tachometer.

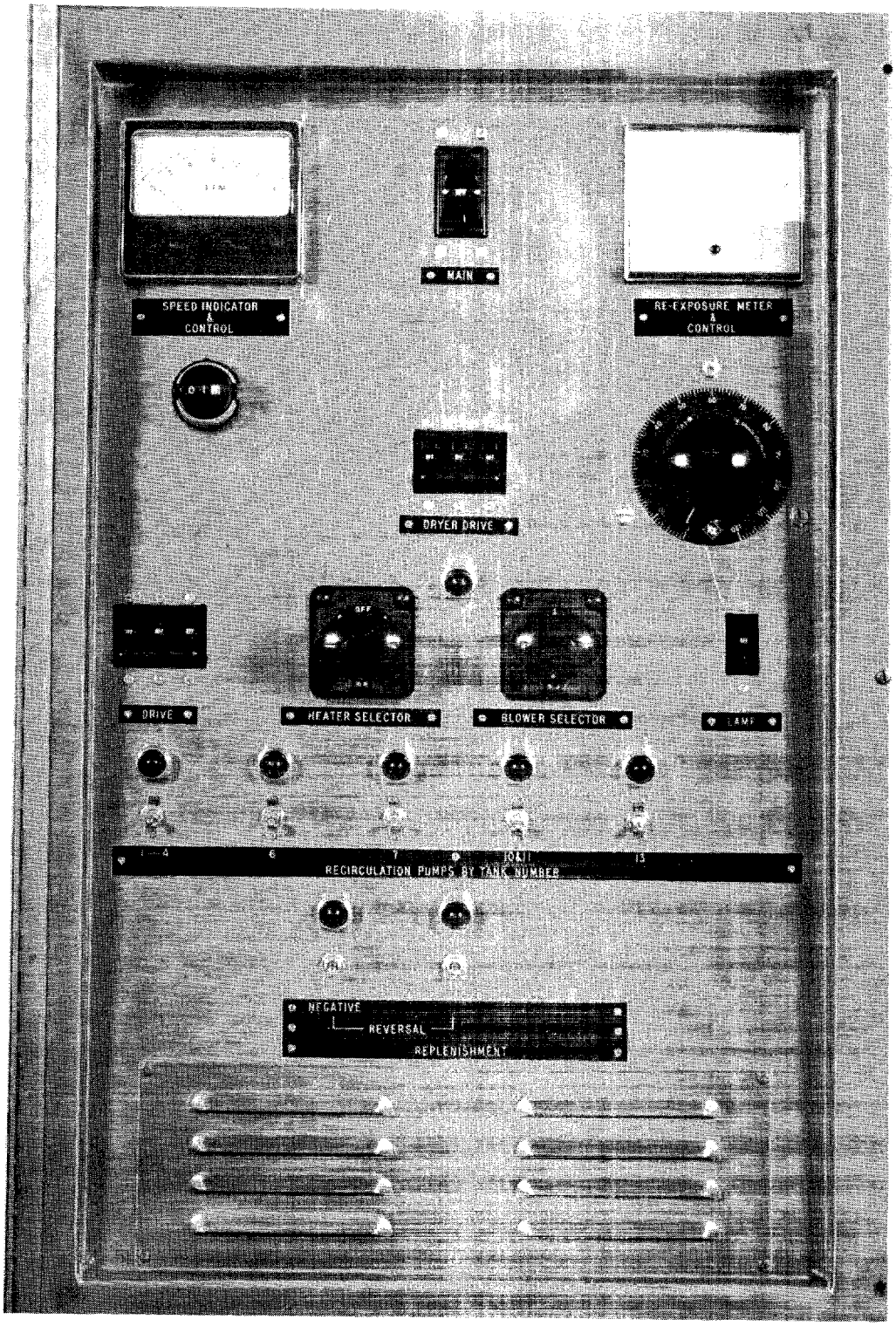


Figure 4. Electrical Control Panel

NOTE

Machine speed should be returned to "0" before turning OFF the DRIVE or MAIN switches.

e. DRIVE Switch. The ON-OFF control for the main drive motor.

f. REPLENISHMENT (REVERSAL and NEGATIVE) Switches. The electrical portion of the pneumatic-electrical replenishment system is energized with these switches. (One or both switches are turned ON depending on the process.) An associated pilot light behind a safe-light jewel glows when the switch is turned ON. See Section 1.2.8 for an explanation of the replenishment system.

g. HEATER SELECTOR. This selector switch is used to control the number of heating elements in operation inside the dryer cabinet. The control is used to energize up to six (plus a thermostatic-controlled) heater elements. A pilot light, centered above and between this switch and the BLOWER SELECTOR, glows when a single heater element, which cycles on or off as necessary to control temperature, is energized. See Section 1.2.11 for a description of dryer operation.

h. DRYER DRIVE. This control is a 50-amp circuit breaker similar to the control used as the MAIN switch. It must be turned ON before either the dryer blower motor or heating elements can be energized by their respective selector switches.

i. RECIRCULATION PUMPS BY TANK NUMBER. The five controls are used to energize pump motors to recirculate various chemical solutions used in nine tanks in the processor tank section as follows:

(1) The switch labeled 1-4 (See Figure 4) energizes the pump for developer and this solution recirculates through the first four tanks.

(2) No. 6 energizes the pump which recirculates bleach solution (used only during reversal process) through tank 6.

(3) No. 7 energizes the pump that recirculates solution through tank 7 only during reversal process or through tanks 6 and 7 during negative process.

(4) No. 10 & 11 energizes the pump that recirculates solution through tanks 10 and 11 during reversal and through tanks 8 through 11 during the negative process.

(5) No. 13 turns on the pump for recirculation of fixer through tank 13 during the reversal process only.

Although Nos. 6 and 13 control pumps that recirculate chemical solutions peculiar to the reversal process, the switches should also be turned ON during a negative process to help recirculate fixer in tanks 6 and 7 and wash water in tanks 12 through 16. This additional recirculation provides more agitation and aids temperature control.

j. RE-EXPOSE METER and CONTROL. The ammeter indicates electrical current to the 14 lamps in the flasher assembly which is used during reversal processing to re-expose the image. The variable autotransformer, whose knob and scale are located just below the meter, is adjusted to vary this power.

k. LAMP. This switch is actually a circuit breaker that is the ON-OFF control for the lamps and cooling blower motor for the flasher assembly.

1.2.4 Main Drive System

The transport system is driven by a one-horsepower variable speed motor located in a compartment in the bottom of the feed stand as shown in Figure 5. One chain powers the horizontal main drive shaft which drives the entire roller transport system in both the processing and the drying sections.

The roller racks take their drive from a series of worms mounted on the main drive shaft. Power to the dryer drive is also transmitted by means of two worms mounted on the main drive shaft. There worms operate two pulleys which drive two endless belts.

The pacer roller assembly consists of two phenolic rollers which derive their power from the main drive shaft by means of a chain. These rollers grasp the film entering the processor and transport the film to the entrance crossover assembly.

1.2.5 Processing Tank Section

This section, often referred to as the wet section of the processor, contains 16 tanks made of four 4-tank modules. During normal negative processing, tanks 1 through 4 contain developer, tank 5 contains a stop bath, tanks 6 through 11 contain fixer, and tanks 12 through 16 contain wash.

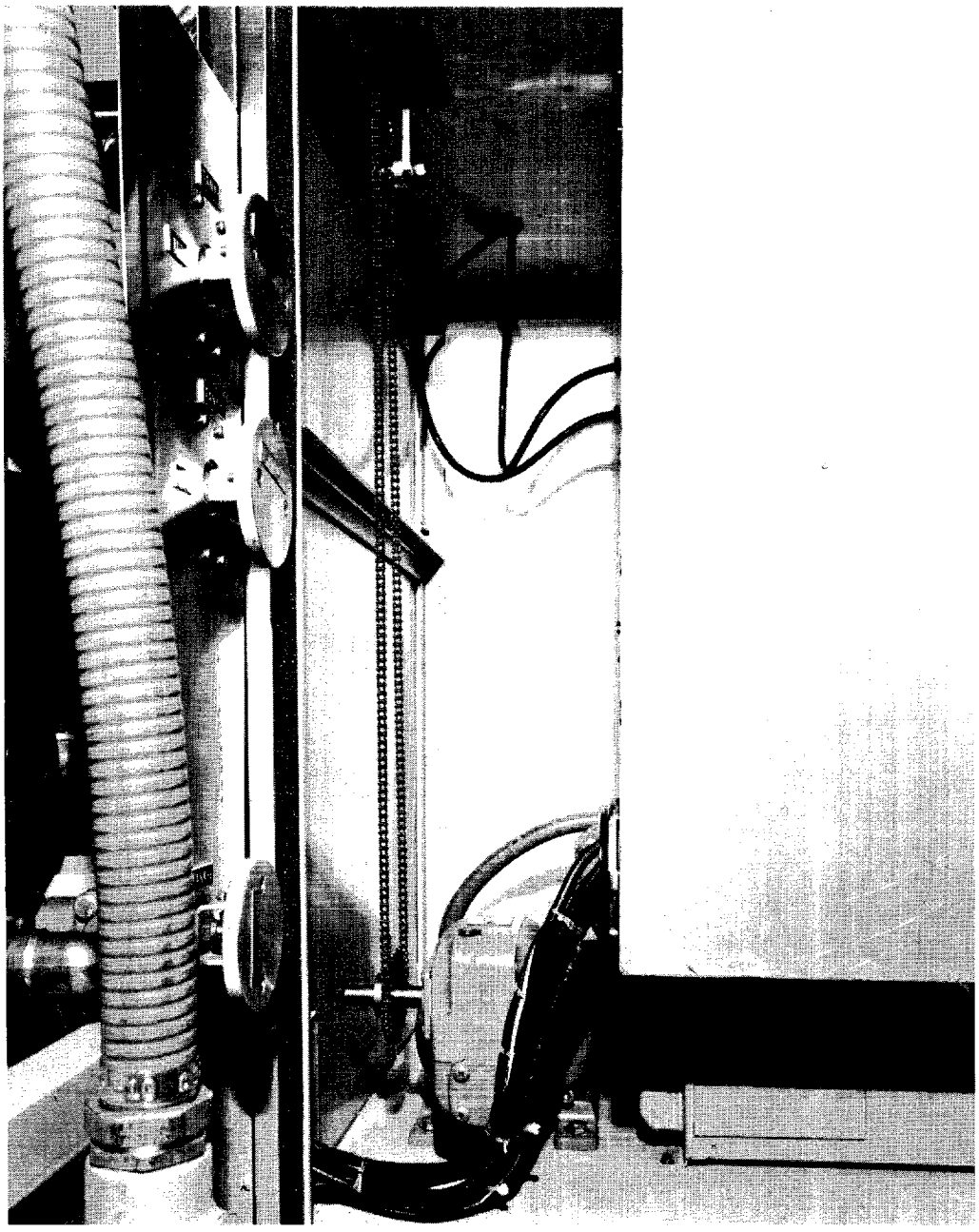
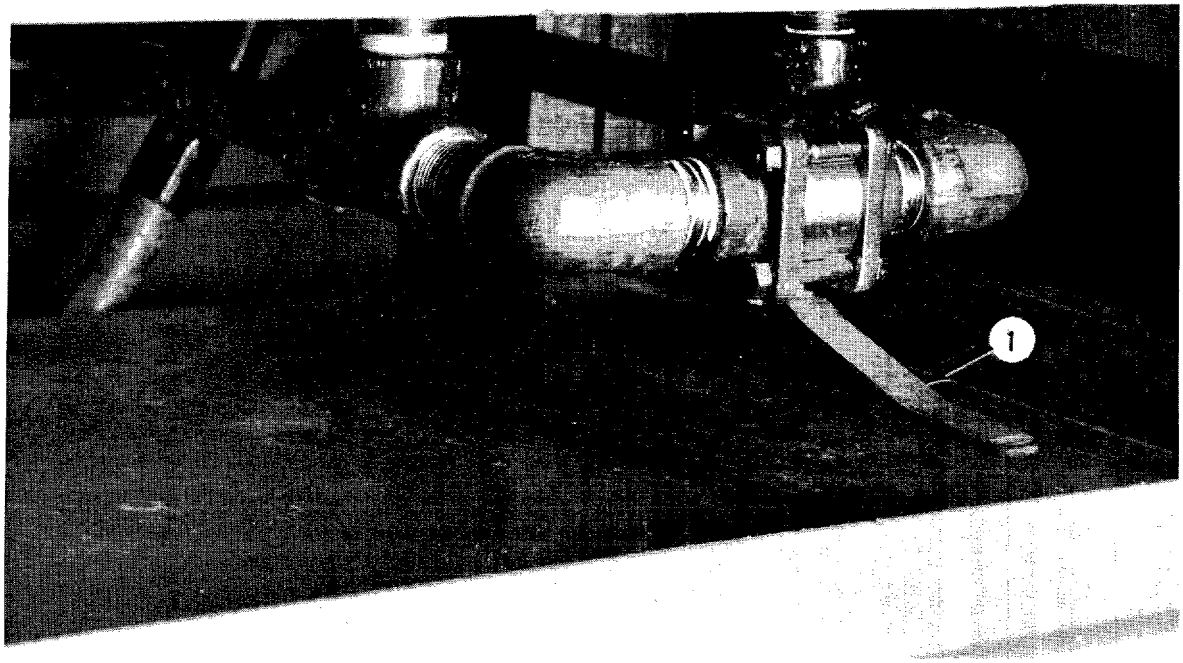


Figure 5. Main Drive Motor and Chain

Used for the negative process only, a bypass line between tanks 7 and 8 allows economical and expedient quick filling of tank 8 by balancing solution flow throughout the six fixer tanks. The valve in this line is reached by removing the panel in front (there is a label on this panel that reads QUICK-FILL VALVE NEGATIVE ONLY) of tanks 5 through 8. The valve is located just underneath the bottom front edge at the point where tanks 7 and 8 meet. See Figure 6. It must be opened before quick filling for a negative process and closed just after the tanks are filled. It is NEVER opened for a reversal process quick fill.



1. Lever (In closed position)

Figure 6. Bypass Valve Between Tanks 7 and 8

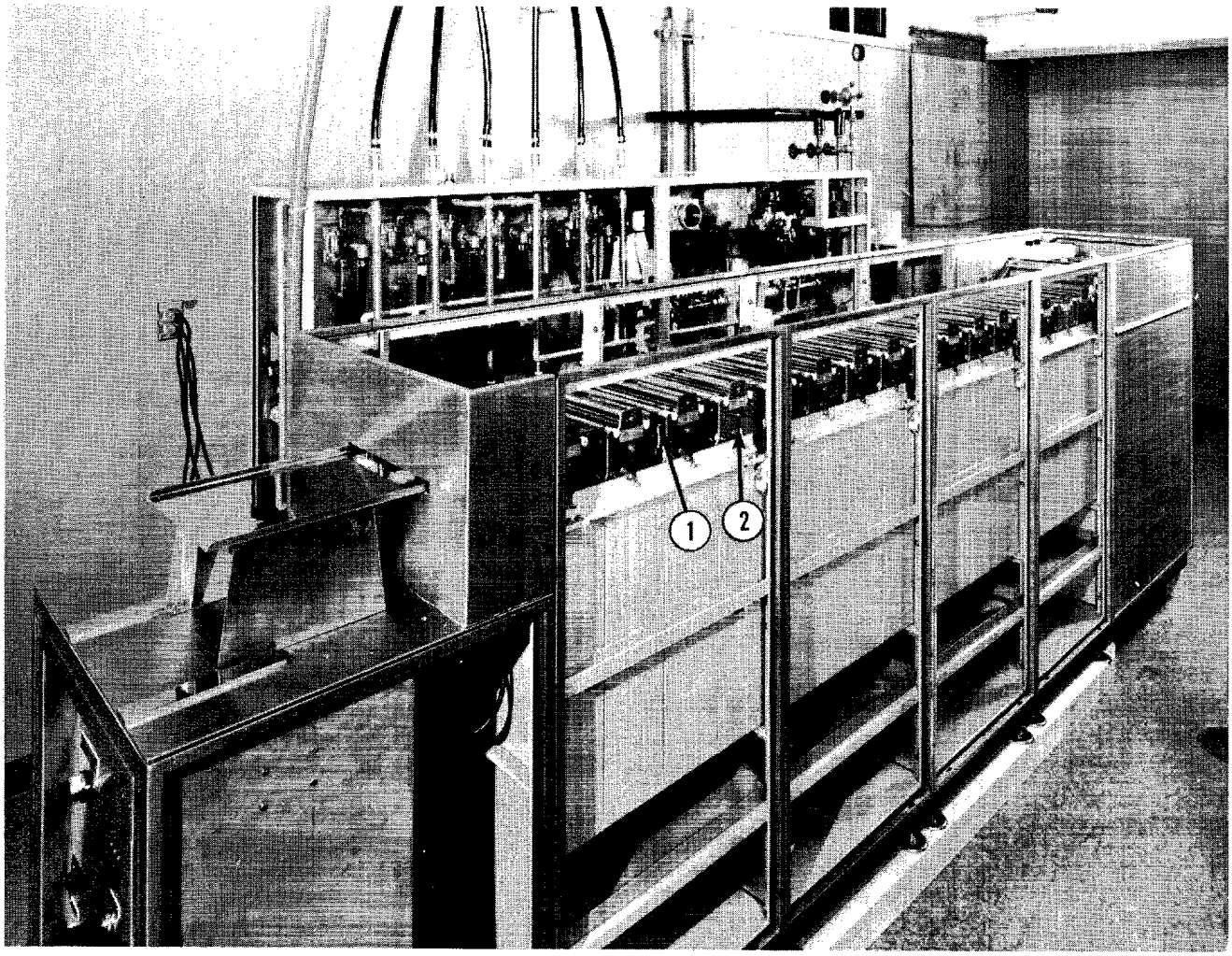
For reversal processing, tanks 1 through 4 contain developer, tank 5 contains stop bath, 6 contains bleach, 7 contains a clearing bath, 8 contains wash, 9 is empty when the image is re-exposed by white light from a flasher unit mounted on top of the tank. Tanks 10 and 11 contain the second developer, 12 contains wash, 13 contains fixer, and 14 through 16 contain wash. A third type of process is possible since tank 1 can be isolated, filled with water, and used as a prebath if desired.

Each four-tank module comprises, besides the tanks, a plastic catch pan and drain, a section of the rack drive assembly, and the frame to which these components are attached. A view of the tank section is shown in Figure 7. In operation, each tank contains a rack, turnaround, and crossover plus the pertinent solution. There are leveling-screw pads under each corner of a tank module so it can be aligned with the preceding and following portions of the processor during machine installation.

Tank capacity is about 22 liters with a rack in place, depending on the position of the overflow weirs. Each tank is formed from sheets of stainless-steel that are welded together.

1.2.6 Roller Transport System

The complete roller transport system consists of 16 racks (one for each tank) and 17 crossovers, including the entrance and exit crossovers, in the processing section.



1. Crossover 2. Rack

Figure 7. Processing Tank Section

1.2.6.1 Rack Assemblies. The transport in each rack (see Figure 8) consists of chain-driven rollers mounted in a slightly staggered path. As the rollers rotate, the product is conveyed from roller to roller throughout the system.

1.2.6.2 Turnaround Assemblies. The rollers are mounted in vertical rows in the racks. When the product reaches the bottom of each rack, it must be turned 180 degrees in order to climb upward to complete its course through the rack. To make this change in direction, a turnaround assembly (Figure 8) is mounted at the bottom of each rack. The turnaround assembly consists of a 3-inch diameter roller assembly called the master roller, around which are mounted seven smaller roller assemblies called cluster rollers. The cluster rollers, spaced around the master roller, guide the product around the master roller and at the same time continue to transport the product upward into the vertical path of staggered rollers of the rack. The cluster rollers are gear driven by means of a gear on each end of the master roller. The master roller is chain driven.

1.2.6.3 Crossover Assemblies. As the product reaches the top of the rack it enters the crossover assembly (similar in design to the turnaround assembly), which conveys it to the downward vertical path of the next rack. There are 17 crossover assemblies: one for the entrance to the first rack, one between each pair of the 16 racks, and one which incorporates a squeegee roller at the exit of the last rack. All, except the entrance and exit units, are identical to the one pictured in Figure 9.

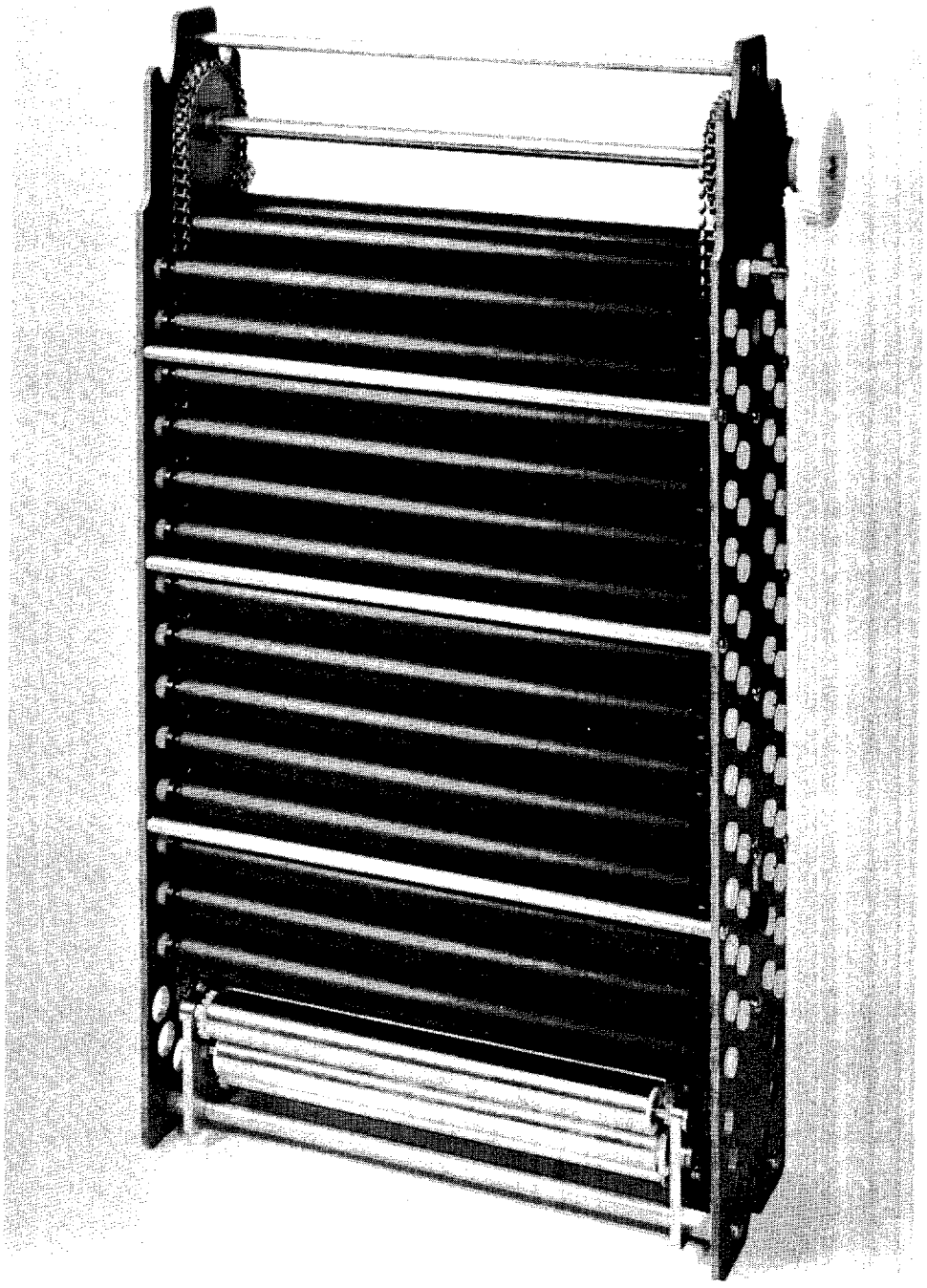


Figure 8. Rack Assembly

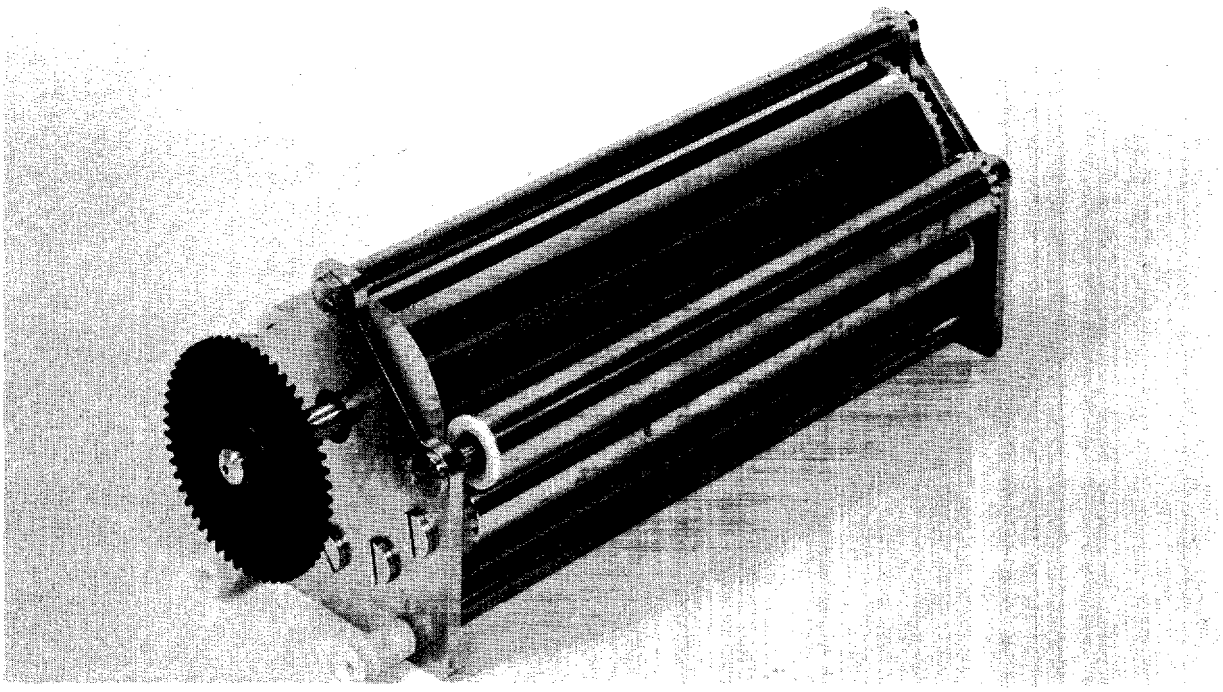
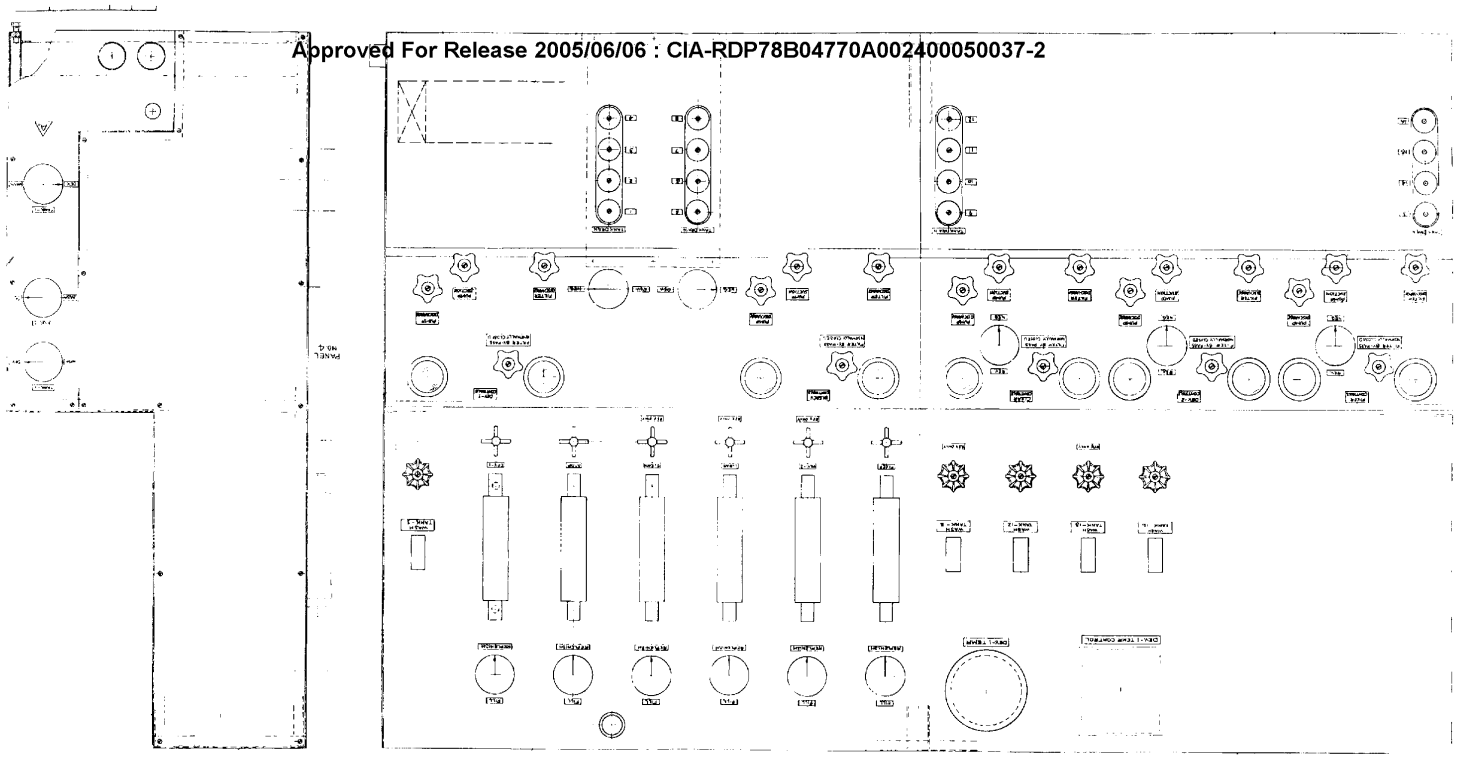


Figure 9. Crossover Assembly

1.2.7 Solution Control Panel

This panel contains various controls for metering, directing flow, tempering, and draining the solutions used in the processor. Behind the face of the panel is a cabinet enclosing the piping, pumps, filters, heat exchangers, and valves for the solution system. The panel and cabinet are referred to as the solution control panel assembly. This assembly stands against the back side of the wet tank section of the processor. The face of the panel is depicted in Figure 10.

Those controls on the panel are described as follows:



a. Directional Control Valves. There are 14 of these valves; 11 are located on the face of the panel and three are found on the feed end of the panel near the back side of the feed stand. All have two positions and their purpose is as follows:

(1) The six valves located over the flow meters are positioned on FILL to bypass the flow meters during the initial filling of the tanks. They are positioned on REPLENISH during processing so solution can flow through the flow meter for replenishment.

(2) The five valves located about halfway up the face of the panel are used for process changeover and have their positions labeled NEG. and REV.

(3) The three valves on the feed end of the panel are used to isolate tank 1 for a prebath. When tank 1 is used for developer (along with tanks 2, 3, and 4) all three valves are placed on DEV. When tank 1 is used for prebath, the valves are placed on WASH.

b. Flow Meter. Flow meters are used to measure the rate of flow for developer (labeled DEV-1), a stop bath (STOP), a bleach (BLEACH), a clearing agent (CLEAR), another developer (DEV-2), and for fixer (FIXER). These units are rated for a maximum flow of 1100 cc per minute and the desired flow is specified as a percentage of this figure.

Five Ratosites are employed to indicate the flow of water into the wash section. The Ratosites have a maximum capacity of 4 gallons per minute and are calibrated in gallons per minute.

The Ratosite flow meters are labeled WASH TANK-1, WASH TANK-8, WASH TANK-12, WASH TANK-13, and WASH TANK-16. See Section 1.2.10, Water Circulation System.

c. Solution Metering Valves. Below each flow meter (there are 11) is a valve that is turned clockwise to decrease or counterclockwise to increase flow. The valves for the six chemical solutions are needle valves. (Never use these needle valves as shut off valves.) The controls for the five wash lines are globe valves.

d. Temperature Controller. An indicating controller labeled DEV-1 TEMP. CONTROL automatically maintains solution temperature by adjusting the flow of hot (120F) or chilled (55F) water through a mixing tee. Each line, hot and cold water, has an air-operated valve which opens or closes to control water flow as directed by the indicating controller. These valves close if air pressure fails. Air pressure is necessary for both valves to open and for the temperature control system to operate. Hence, the air system must be turned on and 25 psi of air must be available for processor operation.

From the mixing tee, the tempered water flows through the shell sides of five heat exchangers connected in series. The first heat exchanger has the first developer flowing through its tube side, the second has bleach flowing through, the third has either fixer or clearing agent flowing through, the fourth has second developer or fixer, and the fifth has fixer. From the last heat exchanger, the water flows to the five wash Ratcsites and on to the respective wash tanks.

The controller senses the water temperature from a sensor installed in another tee between the mixing tee and the inlet to the shell side of the first developer heat exchanger. If the controller senses a change, it causes the pneumatically-operated valves in the hot and chilled water lines to open or close as required.

e. Temperature Gage. This thermometer indicates developer temperature and is so labeled, DEV.-1 TEMP. The six-inch diameter face and the white numerals and scale on the black background make it easy to read this instrument with a hand-held safelight.

f. Filter Pressure Gages. The filters for all the chemical solutions except stop bath are located behind the face of the panel. Each of the five filters has two pressure gages, one on each side of the filter housing, that are checked periodically for pressure drop across the filter to determine if the filter cartridges need changing (see Section 4.7, Changing Filter Cartridges).

g. Shut-Off Valves. There are three control valves associated with each filter. Two valves are located one under each filter pressure gage and a third is located between the gages. The two lower valves, labeled PUMP DISCHARGE and FILTER DISCHARGE, are closed when a filter cartridge is replaced; the third valve is in a line bypassing the filter housing and can be opened to allow solution flow should it be necessary to change a filter cartridge during processor operation. The bypass valves, which are all labeled FILTER BYPASS NORMALLY CLOSED, are included one each in sections that also contain the two filter shut-off valves, a shut-off valve (labeled PUMP SUCTION) for pump suction, and the two pressure gages noted in f. above.

h. Drain Valves. The four valves arranged in each of four vertical rows on the bottom of the solution control panel are opened to drain the 16 tanks. Each row is labeled TANK DRAIN and the valves are numbered from 1 through 16, respectively, to indicate which tank is emptied when that valve is opened. The bottom panels, each of which contains drain valves, can be easily removed for access to the filter housings, etc.

i. Air Pressure Gage. This gage indicates the air pressure necessary to operate the replenishment system for the six chemical solutions. Air pressure in this system is adjusted by a regulator valve on top of the solution control panel cabinet that is located over the air pressure gage. It should be set at 1 1/2 psi, maximum. Furthermore, this valve must NEVER be used to turn the air on or off. Instead, use the control valve in the line from the building air system. The solution replenishment system is described in Section 1.2.8.

1.2.8 Replenishment Systems

A pneumatic-electrical system is employed to balance solution replenishment with the amount of product being processed. Solutions are replenished through their respective flow meters at the prescribed flow rate with fresh solution. Replenishment occurs each time film is fed into the machine.

Two air pressure switches located in front of the pacer rollers and behind the feed slot trigger the replenishment cycle. One air pressure switch is centered in relation to the length of the feed slot and the other switch is near the right end of the slot. Neither switch will operate unless the air stream directed against its orifice is interrupted. This air is delivered at 1 1/2 psi from the regulator and pressure gage on the solution control panel (see Section 1.2.7, item i). When a piece of film is fed into the processor it interrupts the air flow in one or both pressure switches. This action causes the switch(es) to close an electrical circuit and energize a solenoid valve that opens an air pressure line leading from the building air supply to three air-operated diaphram controllers. These controllers then open valves in the solution lines for developer and the two fixers. The solutionsthen flow through the respective flow meters and on through lines leading to the suction side of each recirculation pump to furnish replenishment.

The solenoid valve in the building air supply line will remain open five seconds after the last piece of product is fed into the machine. When this valve closes, air pressure to the pneumatic controllers is shut off and the controllers, which are spring loaded to the closed position, close the solution valves.

1.2.9 Recirculation Systems

Recirculation continually brings fresh solution to the surface of the product. Motor driven pumps recirculate all solutions except wash water and stop bath. Wash and stop bath drain to sewer after circulating through the processor and spilling out the weirs.

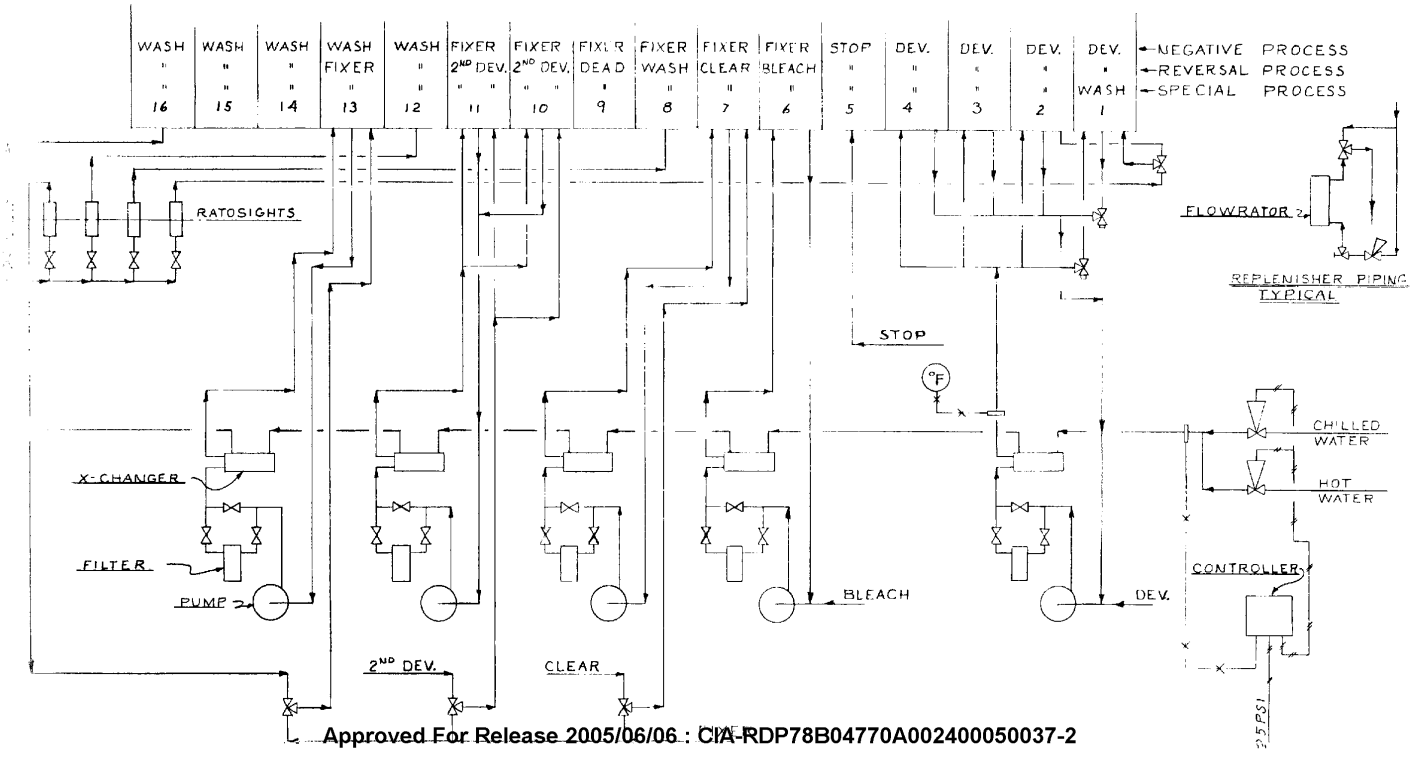
The five systems, one for each solution, are nearly identical. All are shown schematically in Figure 11. In the first developer recirculation system, solution returns from the first four tanks in separate lines for each tank and combine into a single line to pump suction. The pump forces the solution through a filter and through the tube side of a heat exchanger for temperature control. After leaving the heat exchanger, the solution flows through one line to a header where it separates into four lines for flow back to the first four tanks.

The fixer, bleach, clearing agent, and second developer systems are nearly identical to the first developer system. However, since first developer temperature is more acute than the temperature of the other solutions, water flows through the shell side of the heat exchanger for first developer before it flows through the other heat exchangers. Also, a temperature sensing element for the first developer is installed downstream from the developer heat exchanger in the developer line. This element is connected to the developer thermometer on the solution control panel.

1.2.10 Water Circulation System

As explained in item d., Section 1.2.7, Solution Control Panel, tempered water comes from a mixing tee and then flows through the shell sides of the five heat exchangers to the control valves and flow meters for tanks 12 through 16 for the negative process or for tanks 8, 12, 14, 15, and 16 (and possibly No. 1) for the reversal process. There are five flow meters (Ratosites) and control valves which have the following labels and purposes:

a. WASH TANK-1. This flow meter and valve regulate flow of water to tank 1.



b. WASH TANK-8. The valve and flow meter control water flow to tank 8 only during the reversal process.

c. WASH TANK-12. The valve and flow meter control water flow to tank 12 only.

d. WASH TANK-13. The valve and flow meter control water flow to tank 13 only.

e. WASH TANK-16. The valve and flow meter control water flow to tanks 14, 15, and 16.

NOTE

Water cannot enter the processor until the valve between the building air supply and the processor air system is opened. This valve is located on top and near the take-off end of the solution control panel. It must be opened to supply 25 psi air to open the valves in the hot and chilled water lines and to establish temperature control.

1.2.11 Air Dryer

1.2.11.1 Air Circulation. Air circulation through the dryer is provided by a blower installed in a cabinet behind the dryer cabinet. See Figure 12. A 1 1/2 hp motor drives the blower fan via pulleys and a drive belt at one of four speeds as selected by the BLOWER SELECTOR control (see item b., Section 1.2.3, Electrical Control Panel); i.e., at 600, 900, 1200, or 1800 rpm.

b. WASH TANK-8. The valve and flow meter control water flow to tank 8 only during the reversal process.

c. WASH TANK-12. The valve and flow meter control water flow to tank 12 only.

d. WASH TANK-13. The valve and flow meter control water flow to tank 13 only.

e. WASH TANK-16. The valve and flow meter control water flow to tanks 14, 15, and 16.

NOTE

Water cannot enter the processor until the valve between the building air supply and the processor air system is opened. This valve is located on top and near the take-off end of the solution control panel. It must be opened to supply 25 psi air to open the valves in the hot and chilled water lines and to establish temperature control.

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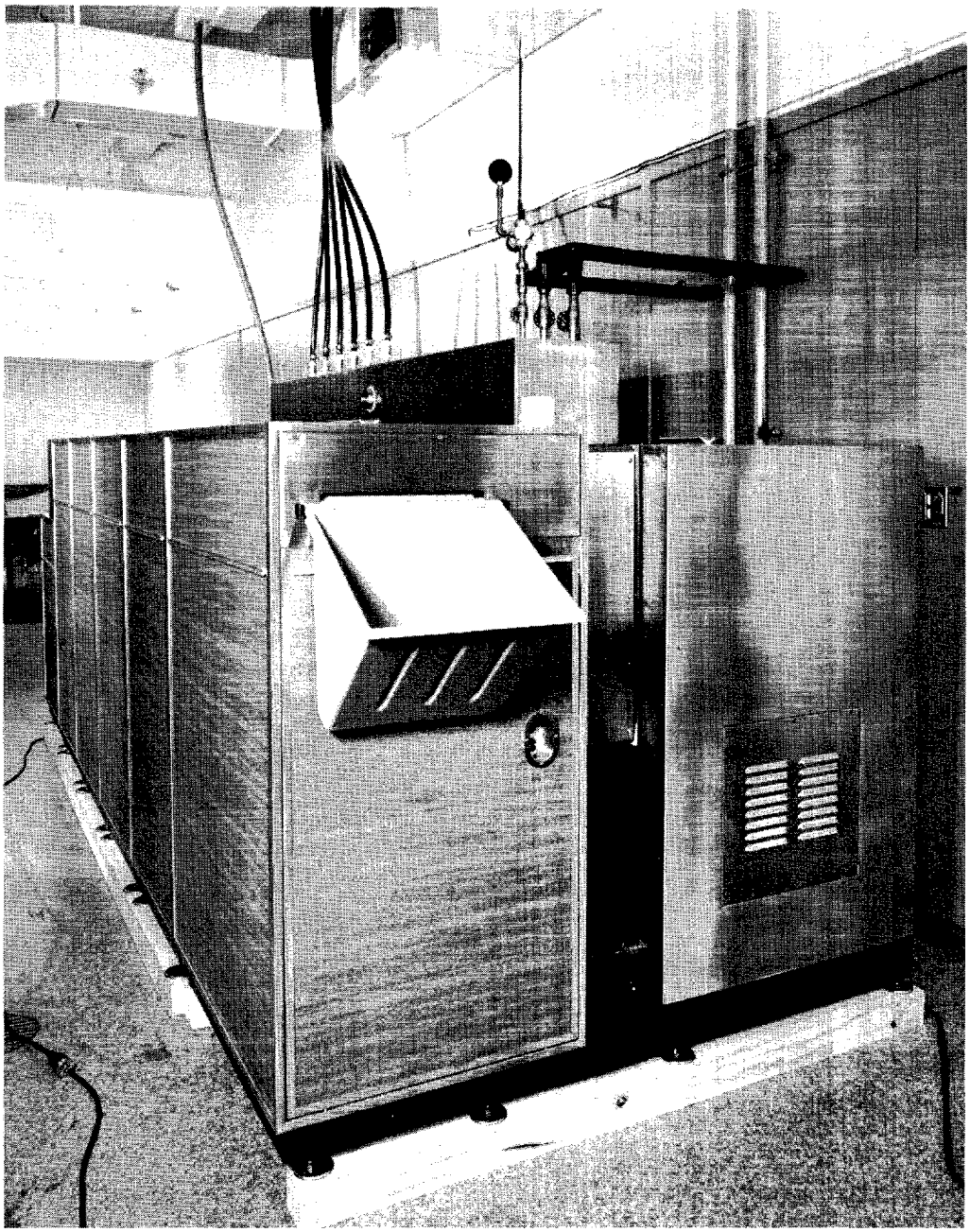


Figure 12. Take-Off End of Processor

Make-up air flows through a louver and filter in the take-off end panel and into the motor-blower compartment. The blower draws recirculated air over heaters and forces the air through a high-efficiency filter and into the pressure plenum from which it enters the ends of slotted air tubes.

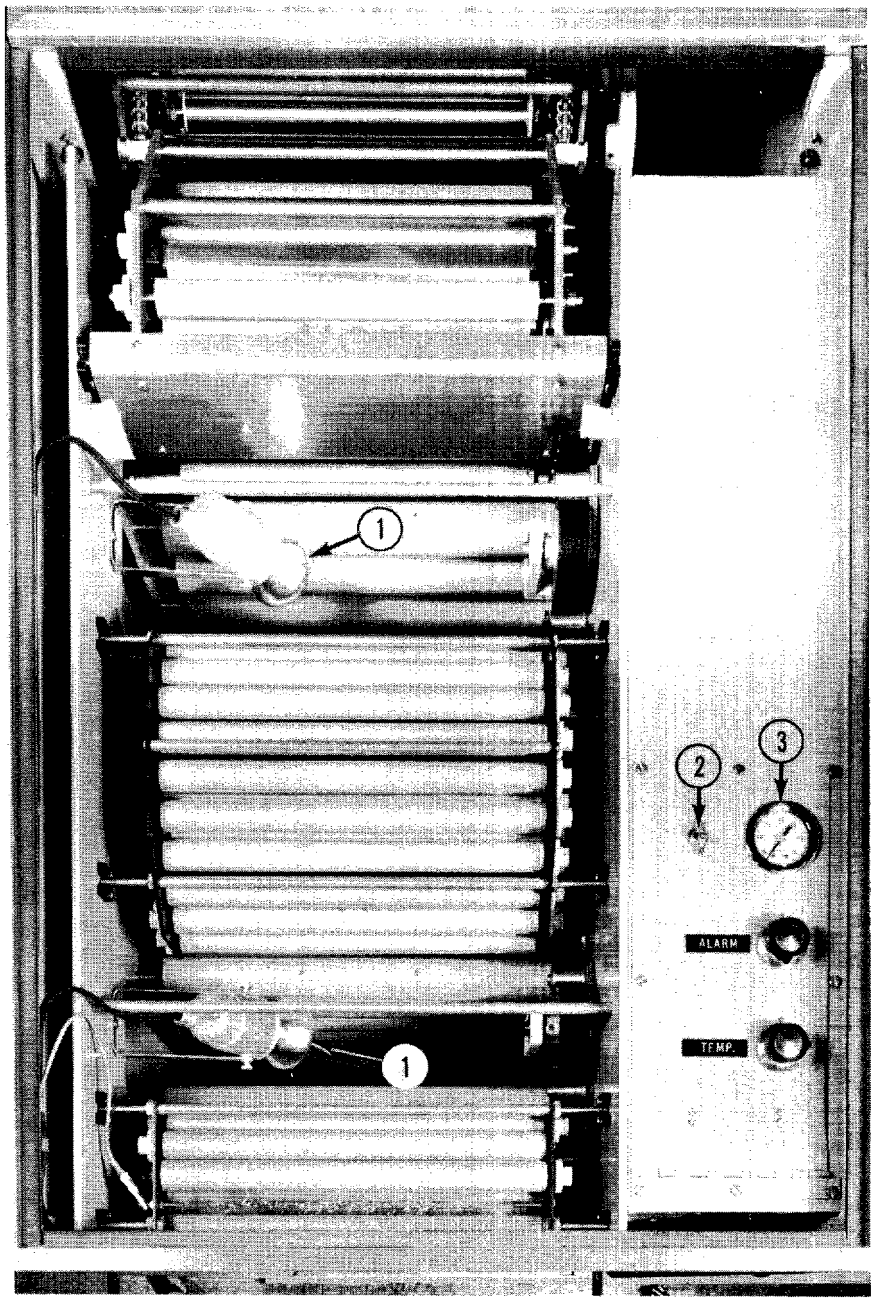
The tubes are located so that warm air is directed at both sides of the product as it is transported by the dryer roller transport system.

1.2.11.2 Electrical Heater. Dryer heat is supplied by a six-element electrical heater that has five elements controlled by the HEATER SELECTOR control on the electrical control panel, and one heater element controlled by an adjustable thermostat located on a panel in the top of the dryer cabinet and labeled TEMP. See Figure 13.

Positions for the selector control on the electrical control panel are from 0 through 7. Position 2 (0 and 1 are inactive) on the switch activates the thermostat-controlled heater element (just described). As the switch is moved ahead one setting, one more heater element is energized. Including the controlled element, a total of six heater elements are turned on with the selector control.

The HEATER SELECTOR control must be set at a point that allows the controlled heater element to cycle. If the element remains on continuously (indicated by a signal light between the HEATER SELECTOR and BLOWER SELECTOR on the control panel) an additional number (one or more) of heaters should be used. On the other hand, if the controller element is off continuously, one or more heaters should be turned off.

1.2.11.3 Exhaust Damper. A damper near the top rear side of the dryer cabinet can be opened or closed to regulate the volume of make-up air forced into the dryer plenum and thus control the humidity of recirculated air. The damper is contained in an adapter which is connected to an exhaust duct.



1. Reflector Type Lamps 2. Lamp Switch 3. Thermometer

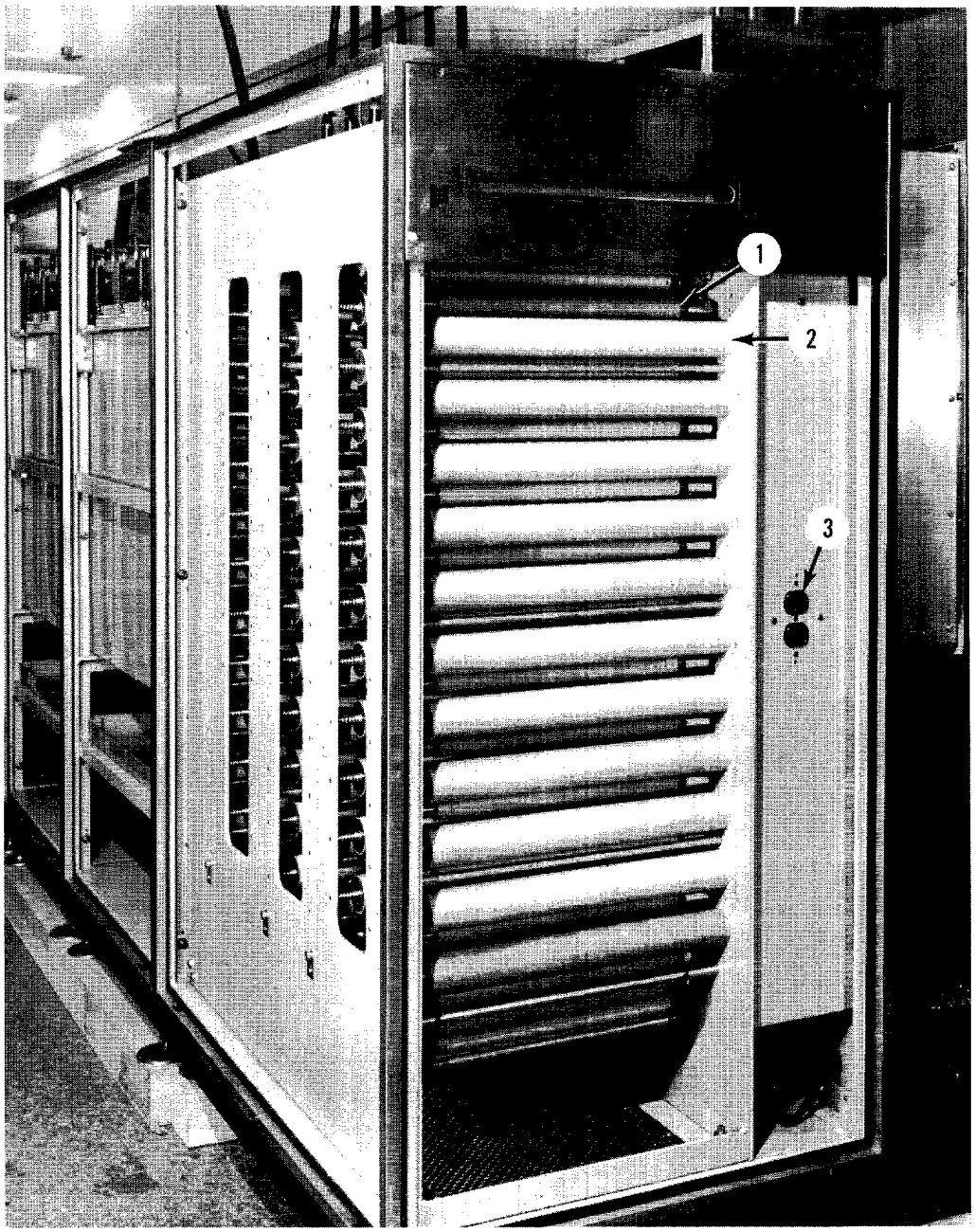
Figure 13. Dryer Controls Inside Top of Cabinet

1.2.11.4 Overheat Alarm. An overheat alarm is provided by a second thermostat labeled ALARM and located between the temperature controlling thermostat and a thermometer that indicates the temperature in the dryer pressure plenum. See Figure 13. The ALARM thermostat is set 5F above the desired drying temperature. Should the temperature in the pressure plenum reach that setting, a bell mounted in the feed stand of the processor will ring.

1.2.11.5 Filter Gage. This gage, located near the juncture of the two sections of the dryer cabinet on the take-off end of the processor, is a simple device that compares the air pressure on each side of the filter. The gage is adjusted to signal a need to change the filters when they become dirty. The condition is checked once a week by placing the BLOWER SELECTOR control on position 4 so that the dryer blower operates at peak speed (1800 rpm) to provide the highest pressure differential.

1.2.11.6 Dryer Transport. The dryer transport system consists of entrance and exit crossovers, four vertical rows of belt-driven rollers mounted in a slightly staggered path, two turnarounds, and a dryer drive roller. Rollers in both up-paths are overdriven, and the last half of the over-all dryer transport system is overdriven in respect to the first half. Thus, there is a slight increase in rotation for each succeeding vertical row of rollers. This progressive increase helps prevent unwanted loops forming in continuous lengths of film and it helps prevent overlapping between pieces of cut-sheet film.

Up-path rollers have grooves machined in their pulley hubs. (These hubs are smaller in diameter than those on the down-path rollers.) Rollers must be replaced in the correct row whenever they are removed for cleaning or maintenance purposes.



1. Transport Rollers 2. Air Tubes 3. Accessory Power Receptacle

Figure 14. Dryer Cabinet with Panels Removed

Air tubes, mounted between the transport rollers, (see Figure 14) direct heated, high-velocity air onto both surfaces of the product. The guide pins mounted on the air tubes direct the product from one transport roller to the next.

1.2.11.7 Dryer Inspection Lights. Two small reflector type lamps are mounted in the top of the dryer cabinet. After removing the top panel, they can be turned on by a toggle switch adjacent to the thermometer to provide illumination for checking film transport through the cabinet.

1.2.12 Flasher Assembly

Reversal processing necessitates a bleach, a clearing bath, and re-exposure between the first and second developing stages to achieve a reversal image. For the RT-12R Processor, the flasher assembly provides re-exposure*.

The assembly comprises a lamp house that contains 14 tungsten lightbulbs rated at 75 watts each. During reversal processing, it sets on top of empty tank 9; the top panel over this tank section is cut out to accommodate the assembly and the rack and crossovers 8 and 9 are replaced by the flasher crossover. Flexible tubing connects the short stack on top of the lamp house to a cooling blower mounted in the solution control panel. Film passes below the lamps on the flasher crossover rollers. Figure 15 depicts the flasher assembly installed on the processor with panels removed to show details.

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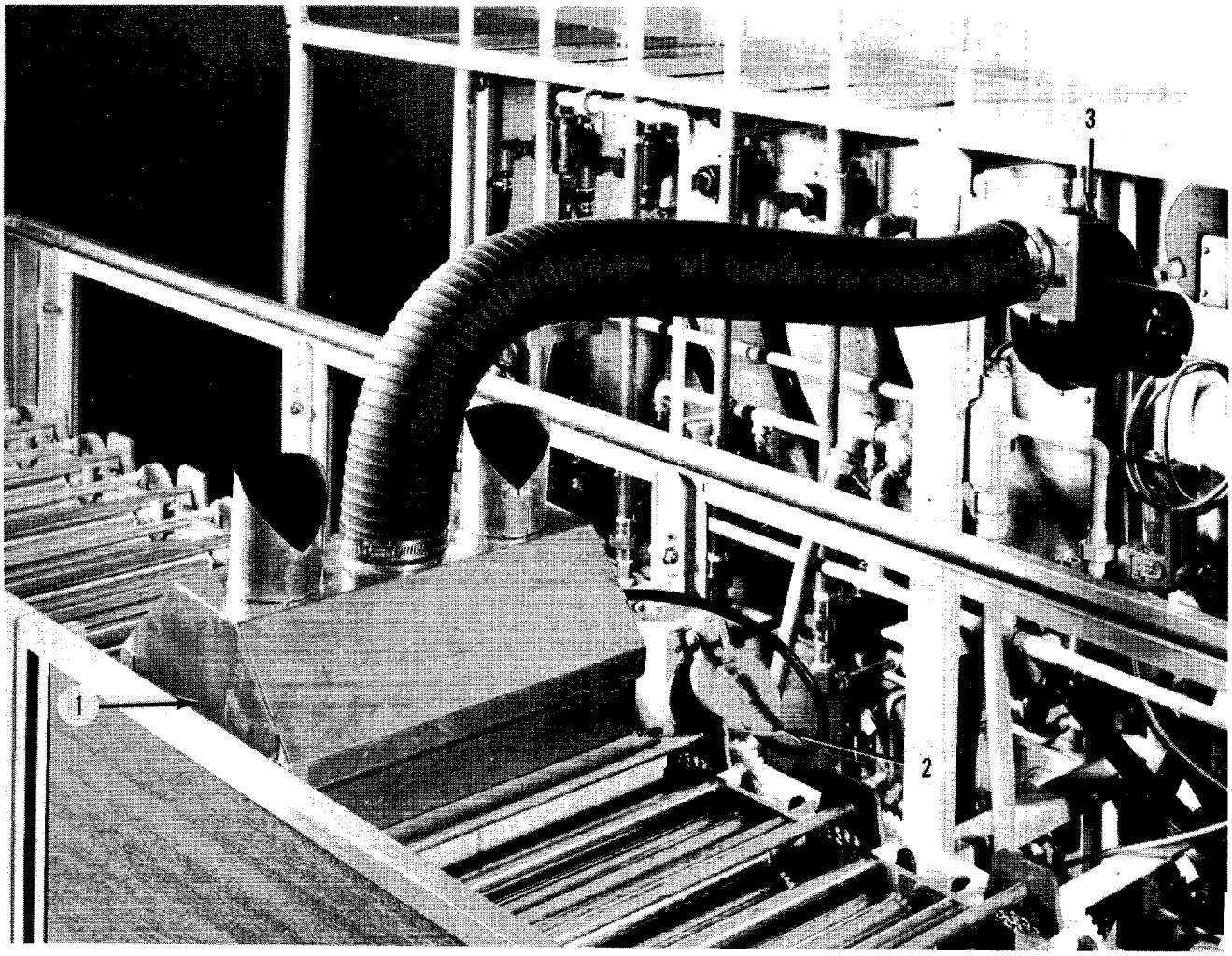
* A reversal image can also be accomplished by including a fogging agent in the second developer. In this case, re-exposure by the flasher assembly would be deleted.



1. Flasher Housing 2. Power Outlet for Lamps 3. Cooling Blower

Figure 15. Flasher Assembly Installed

As described in Section 1.2.5, Electrical Control Panel, items j. and k., electricity that powers the lamps is indicated and adjusted with the RE-EXPOSURE METER and CONTROL. Also, power for the lamps and cooling blower is turned ON or OFF with the LAMP switch.

1.3 PORTABLE TAKE-UP

This device permits continuous processing of roll films on the RT-12R (and other processors) while changing the take-up spool. The accessory provides ample time to cut the processed film and change the take-up spool while operating continuously at processing speeds up to 25 feet per minute. Up to 1000 feet of film can be wound on a Dexter-type spool positioned in the take-up assembly.

The take-up assembly attached to the processor is shown in Figure 16.

For complete description and operation refer to the Operating Instructions for the Portable Take-Up Assembly, PTU-1, revised June 1965 a copy of which is furnished with this manual.

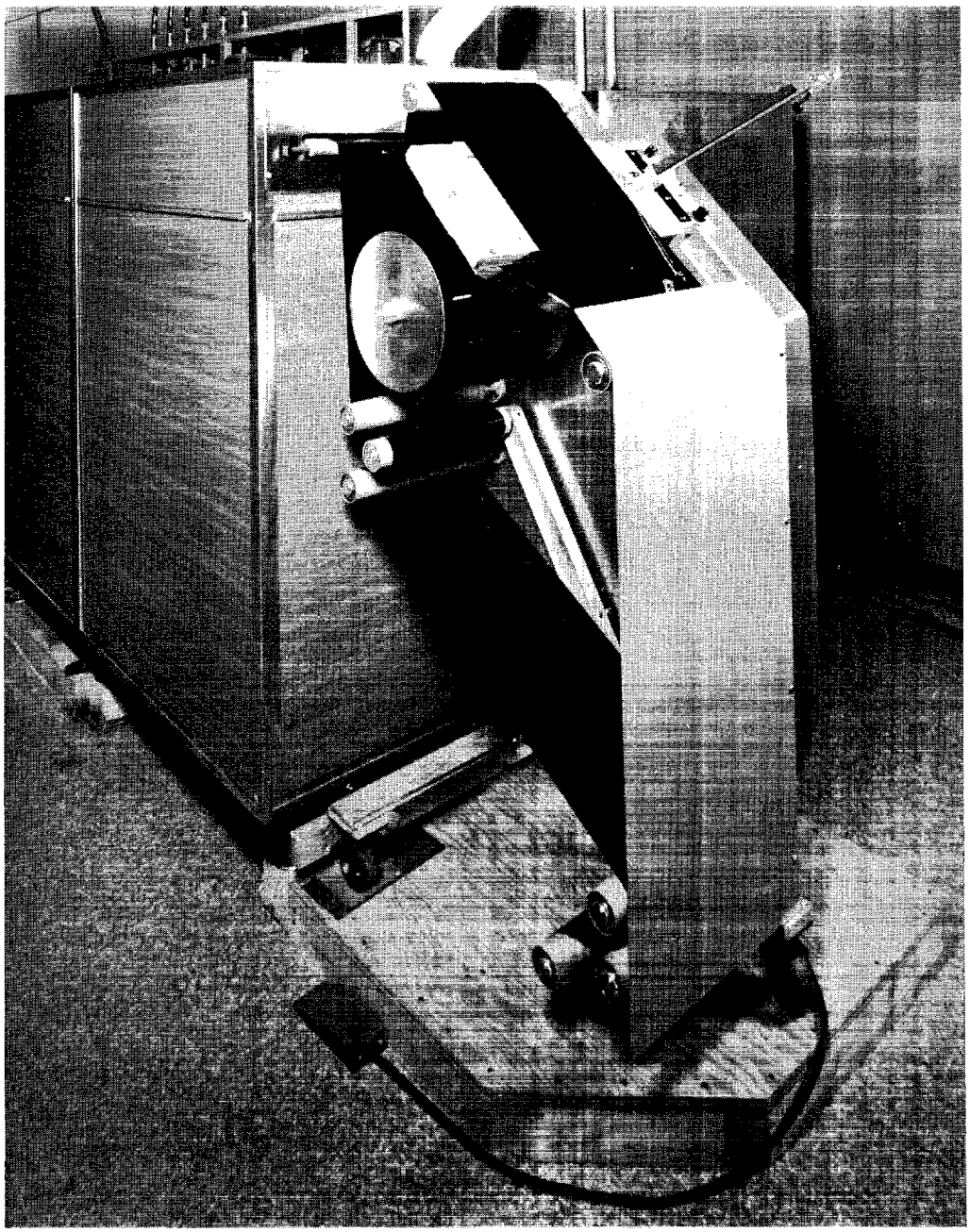


Figure 16. Portable Take-Up Assembly Installed on Processor